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AUTHOR Lambert, Matthew E.; And Others
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ABSTRACT

Increasing use of computer programs for undergraduate psychology education has raised concern over the impact of computer anxiety on educational performance. Additionally, some researchers have indicated that classroom computer use can exacerbate pre-existing computer anxiety. To evaluate the relationship between in-class computer use and computer anxiety, students (N=44) in an undergraduate abnormal psychology class were assessed for computer anxiety before and after using computerized simulations as part of their course. The Computer Aversion Scale and the Attitudes Toward Computers in General Scale were used to assess computer anxiety and computer attitudes, respectively. Students used four computerized simulations of Agoraphobia, Chronic Headache Pain, Bulimia, and Cocaine Abuse. Significant reductions in computer anxiety and improvement in attitudes toward computers were observed following computer use. Future research should focus on more specific aspects of the relationship between computer experience and computer anxiety. As psychology courseware continues to include a wider variety of learning activities, research investigating more and more complex aspects of these relationships will prove valuable to educators and students. (Author/ABL)

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Matthew E. Lambert, Deborah H. Lewis, & Gerard Lenthall

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Paper presented at the Annual Meeting of the Southwestern Psychological Association, 35th, Houston, TX, April 13-15, 1989.

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MATTHEW E. LAMBERT, DEBORAH H. LEWIS, & GERARD LENTHALL
PAPER PRESENTED AT THE 35TH ANNUAL CONVENTION OF THE SOUTHWESTERN PSYCHOLOGICAL ASSOCIATION, APRIL 13-15, 1989, HOUSTON, TEXAS

ABSTRACT

Increasing use of computer programs for undergraduate psychology education has raised concern over the impact of computer anxiety on educational performance. Additionally, some researchers have indicated that classroom computer use can exacerbate pre-existing computer anxiety. To evaluate the relationship between in-class computer use and computer anxiety, an undergraduate Abnormal Psychology class was assessed for computer anxiety before and after using four computerized simulations as part of their course. Significant reductions in computer anxiety and improvement in attitudes toward computers were observed following computer use.

INTRODUCTION

Over the past several years numerous computer programs have been applied in undergraduate and graduate psychology education. While educational software may offer significant learning potential, some educators are concerned that students who report computer anxiety may be adversely affected when using psychology courseware. Students' fear and avoidance of computers may interfere with their performance on computer based learning tasks. One solution to this problem is to reduce students' computer anxiety prior to their use of educational software.

Computer anxiety is often thought to be the fear and avoidance of computers, but actually the term covers several concepts. Some researchers view computer anxiety from a social learning perspective as consisting of three components: computer fear, computer apprehension, and computer opposition. These three components, respectively, relate to the user's fear and avoidance of computers, increased anxiety surrounding computer use, and reluctance to use computers because of their potential for devaluing people. This perspective leads to treatment which includes methods of reducing computer anxiety by improving

users' efficacy, outcome, and reinforcement expectations; by teaching coping skills; by providing skill building and positive computer experiences; and by educating users about appropriate application of computer technology.

Other researchers, however, conceptualize computer anxiety as a clinical phenomena, influenced by negative attitudes, cognitions, and feelings about computer use and not reduced by computer experience. From this point of view, successful treatment requires clinical anxiety reduction techniques.

The bulk of computer anxiety research suggests that increased computer experience can lead to decreases in computer anxiety, but there exists a degree of uncertainty about the relationship between computer anxiety and computer use. This study evaluated the impact of psychology courseware use on students' computer anxiety and computer attitudes. It was expected that using psychology courseware would lead to decreases in computer anxiety and improved computer attitudes.

Method

Subjects

Forty-four students (females N=38 and males N=6) in an undergraduate Abnormal Psychology course at a small New England liberal arts college participated in this study. The class population was similar to the overall college population in gender, age, and majors. Students' ages ranged from 20 to 41, with a mean of 24.0, SD=6.4. Twenty-six students were Psychology majors; remaining students were equally distributed across majors of Education, English, Business, Social Science, or undeclared. Only one student was enrolled in a computer related course.

Instruments

Computer Aversion Scale (CAS) and the Attitudes Toward Computers in General Scale (ATCIG) were used to assess computer anxiety and computer attitudes, respectively. The CAS employs 31 true-false items and addresses the users' efficacy, outcome, and reinforcement expectations contained in the social learning model of computer anxiety. The ATCIG consists of 19 bipolar adjectives and provides an overall measure of computer attitudes (higher scores indicate more negative attitudes).

Psychology Courseware

The class members used four clinical case simulations portraying problems of Agoraphobia, Chronic Headache Pain, Bulimia, and Cocaine Abuse. The objective in using these simulations was to teach students the processes involved in diagnosing and treating psychological dysfunctions.

Procedure

Students were administered the CAS and ATCIG during the first and last weeks of the Fall 1987 semester. Simulations were scheduled to correspond with related material in the text or class discussion and were completed during the semester. Prior to computer use, students were given a brief introduction to and instructions for using the micro-computers in the university computer center. On the average, students were able to complete the simulations in less than 60 minutes.

Results

Thirty-three of the original forty-four class members completed the four simulations and CAS/ATCIG pre- and posttesting. Comparison of those who completed the study with those who did not revealed no significant differences with respect to age, sex, or initial CAS or ATCIG scores. This would indicate that neither computer anxiety nor negative computer attitudes adversely affected simulation completion or CAS/ATCIG readministration. Dependent t-test analysis of pre- versus post CAS and ATCIG scores indicated significant decreases for both scores from pre- to posttest (Table 1). Significant reductions were also found for the four CAS subscales which assess efficacy, outcome, and reinforcement expectations and negative emotional aspects of computer use (Table 1). These results support the contention that computer exposure can lead to reductions in computer anxiety and improvements in attitudes towards computers. Because some research has indicated that persons reporting high levels of computer anxiety are likely to suffer increased anxiety as a result of computer exposure, further analysis was conducted to examine this relationship in the data. Results of this analysis indicated that persons with high levels of computer anxiety experienced significantly greater reductions in their CAS and ATCIG scores than did the low anxiety group. The belief that persons with high levels of computer anxiety would be adversely affected by exposure to computer use was not supported.

Discussion

The results of this study help to define more clearly the relationship between computer anxiety/attitudes and computer use, and the impact of students' computer anxiety on their use of psychology courseware. Comparison of pretest and posttest scores for the CAS and ATCIG indicated decreases in computer anxiety and negative attitudes after completing the simulations. Students' preexisting levels of computer anxiety or negative attitudes toward computers did not interfere with their completion of the four case simulations. These findings contrast with the results of some research but are consistent with the majority of findings in the computer anxiety literature.

Results of this study indicate that computer anxiety should not be considered as an impediment to the implementation of psychology courseware. Rather than having an adverse effect, increased exposure to computers (and the resulting familiarity with computers) is likely to assist in the reduction of computer anxiety.

Computer anxiety may be a realistic concern of educators who are considering implementing psychology courseware, but it appears that reductions in computer anxiety are concomitant to courseware use. Exposure to non-threatening computer applications may be helpful prior to actual use of courseware, but with the exception of the very small percentage of students whose computer anxiety is phobic in nature, additional measures of anxiety reduction should not be required.

Future research should focus on more specific aspects of the relationship between computer experience and computer anxiety. Do certain types of computer experience lead to greater anxiety reductions over other experiences? How much computer experience is necessary for reduction of computer anxiety? As psychology courseware continues to include a wider variety of learning activities, research investigating more and more complex aspects of these relationships will prove valuable to educators and students.

Table 1

Computer Aversion Scale &
Attitudes Towards Computers in General
Pre-Post Scores

		Pre	Post
ATCIG	$\bar{X}$	84.42	71.80
	SD	13.708	37.694
CAS Total	$\bar{X}$	13.46	8.90
	SD	8.134	7.569
REC	$\bar{X}$	4.27	3.00
	SD	2.793	2.617
OEC	$\bar{X}$	5.22	3.34
	SD	3.004	3.159
EEC	$\bar{X}$	3.98	2.56
	SD	3.260	2.665
NFC	$\bar{X}$	3.76	2.49
	SD	3.360	2.776